

STATE OF INDIANA



INDIANAPOLIS 46206

STREAM POLLUTION CONTROL BOARD

April 27, 1983

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Re: Draft NPDES Permit No. IN 0000281
U.S. Steel Corporation
Gary Works & Tubing Specialties
Public Notice No. 51-3716R

This letter is in response to your January 7, 1983, letter containing comments on the proposed NPDES Permit No. IN 0000281 for U.S. Steel Corporation-Gary Works (USSC) on behalf of the following organizations: Lake Michigan Federation; Save the Dunes Council; Michiana Group, Hoosier Sierra Club; Indiana Division, Izaak Walton League of America; Citizens for a Better Environment; and National Audubon Society, Central Midwest Regional Office.

Responses to Comments

Preface

Effluent limitations in NPDES permits are to be the more stringent of either (i) minimum treatment technology-based limitations, or (ii) those limitations which will achieve water quality standards for the receiving waters. In the case of USSC's Gary Works, the treatment technology-based requirements are specified in the Effluent Limitations Guidelines for the Iron and Steel Manufacturing Point Source Category (Iron and Steel Guidelines), 40 CFR Part 420, a regulation promulgated by U.S. EPA on May 27, 1982, and the applicable water quality standards are 330 IAC 2-1, regarding Lake Michigan discharges, and 330 IAC 2-2 concerning discharges to the Grand Calumet River.

Since the majority of your comments are directed to water quality-based limitations, some introductory remarks on the application of water quality standards in NPDES permits may be helpful. Water quality standards specify acceptable concentrations of pollutants and other water quality parameters in the public waters, expressed either as maximums or minimums as the case may be, to assure that designated beneficial uses of said waters are protected.

Most water quality standards are applicable outside a mixing zone where a discharge intermixes with the public receiving waters.

This is true, for example, of standards for toxic pollutants such as that set by 330 IAC 2-2-5(b)(1) (i.e., 0.1 times the 96-hour LC₅₀) and of standards for the pollutants such as total ammonia, cyanide, phenols, and fluoride specifically listed in 330 IAC 2-2-5(b)(8).

From such standards, permit effluent limits may be calculated for conservative pollutants (those pollutants not susceptible to biodegradation in a aqueous environment) using the following mass balance equation:

$$\text{Effluent limit (mg/l)} = \frac{C_{\text{std}} (Q_s + Q_{\text{eff}}) - C_s Q_s}{Q_{\text{eff}}}$$

where: C_{std} is the water quality standard (in mg/l) for the pollutant; C_s is the upstream ambient concentration (in mg/l) for the pollutant; Q_s is the "critical" low flow (in MGD) of upstream waters; and Q_{eff} is the effluent flow (in MGD).

From this equation it can be seen readily that an effluent concentration limit would have to be as stringent as the water quality standard only under one of two circumstances: one, when the upstream flow, Q_s , is zero or, two, when the upstream pollutant concentration, C_s , is already equal to (or exceeds) the standard. Under all other conditions, the effluent limit may be set at a concentration greater than the standard as a result of the dilution afforded by the receiving waters. In the case of multiple discharges proximately located on a receiving stream, the calculation of water quality-based effluent limits for each discharge becomes much more complex and the above equation cannot be directly used. However, the basic principles governing the determination are the same.

In the case of USSC, even though there is no natural upstream flow in the Grand Calumet River during dry periods, the relatively uncontaminated noncontact cooling water discharges (such as these from outfalls 018, 019 and 020) are considered as potential diluent streams in calculating effluent limits for "downstream" process water outfalls. Even upstream process discharges can be diluents for a discharge of a pollutant not found in the upstream discharges. Thus, as discussed more fully below, we disagree in most cases with your contention that effluent limitations should be set equal to the applicable water quality standard.

In considering prospective water quality-based limitations for discharges to the Grand Calumet River, it is also appropriate to bear in mind the present classification of the river for limited aquatic life usage (see 330 IAC 2-2-3) in recognition of it being predominantly composed of effluent from industrial and municipal point sources and urban nonpoint storm runoff. The character and composition of the river militate against attainment of quality found in less urbanized environments or where significant natural flow exists.

A final point pertinent to water quality-related concerns is the present plan of this agency to conduct a comprehensive reevaluation of water quality in the Grand Calumet River-Indiana Harbor Ship Canal system and an updated wasteload allocation for industrial and municipal point sources. It will be an objective of this effort to promote further improvements in water quality where practicable and to identify areas, if any, where current standards cannot be feasibly attained. This project is anticipated to take place during 1984, resulting in a revised wasteload allocation and/or revised water quality standards in 1985. Thus, there should be ample lead time to utilize the results in the next round of permit reissuances.

Responses to Specific Comments

Permit Application Data for Cadmium, Chromium, and Lead

You have criticized the analytical detection levels utilized in the development of USSC's 2C permit application data for cadmium, chromium, and lead as less precise than currently attainable. Consequently, you have requested that USSC provide more exacting analyses for these parameters.

Using the standard method of atomic absorption spectroscopy, the Water Laboratory of the Indiana State Board Health considers the following values to be reliably attainable:

Cadmium:	0.01 mg/l
Chromium:	0.05 mg/l
Lead:	0.05 mg/l

However, the Water Laboratory typically employs a 5:1 concentration during the digestion (sample preparation) phase of analysis for these three parameters such that the following levels are attainable:

Cadmium:	0.002 mg/l
Chromium:	0.010 mg/l
Lead:	0.010 mg/l

In either case, we would agree that the detection levels reported on USSC's permit application are rather conservative and that more sensitive results are typically obtained. However, we do not believe the lower end of the detectability ranges cited for these pollutants in your comments are reliably and reproducibly attainable without extraordinary laboratory procedures.

USSC has agreed to repeat the analyses for these three pollutants at the specified outfalls. The reported results from composite samples taken January 31, 1983, are as follows:

Outfall/Intake	Cadmium (mg/l)	Chromium (mg/l)	Lead (mg/l)
No. 4 Pumping Station (Intake)	0.003	< 0.002	< 0.020

002	0.007	<0.002	0.020
007	0.006	<0.002	<0.020
No. 1 Pumping Station			
(Intake)	0.002	<0.002	<0.020
017 (No Discharge)	--	--	--
020	0.002	<0.002	<0.020
028	0.003	0.004	<0.020
030	0.002	0.002	0.020
Detection Limits	0.002	0.002	0.020

Need for Effluent Limits for Cadmium, Chromium, and Lead

As a consequence of the imprecise application data for cadmium, chromium and lead, you have proposed effluent concentration limits for one or more of these parameters at outfalls 002, 007, 020, 028 and 030.

Our response to this comment is made in light of the supplemental analyses conducted by USSC at the specified outfalls as discussed in the response to the preceding comment. A review of the data shows all outfalls discharging lead at or below the stated detection limit of 20 ug/l (or, equivalently, 20 parts per billion (ppb)) which is less than one-half of the lower end of the range of lead concentrations cited in your comment as the threshold of adverse environmental effects. If a limit were to be established pursuant to the toxic substance standard for the protection of aquatic life in 330 IAC 2-2-5(b) (i.e., at 0.1 of the 96-hr LC_{50}), the limit would be approximately 300 ug/l where no instream dilution is available. Since this is fifteen times greater than the reported concentrations, we do not believe a limit is warranted for any of the specified outfalls on the basis of water quality standards.

The situation is similar for chromium for which the reported supplemental analytical results are below the detection limit of 2 ppb for all outfalls but 028 and 030. For these two outfalls, the data are equal to and twice the 2 ppb level. These effluent concentrations are from one-tenth to one-fifth the lower end of your cited threshold range of adverse effects. If an effluent limit were to be based on the toxic substances standard for aquatic life for total chromium, it would be in the range of 100 to 200 ppb, again assuming no available instream dilution. Thus, we see no need for an effluent limit based on water quality standards.

For cadmium, the reported values range from 2 ppb to 7 ppb, roughly within your cited threshold range of adverse environmental effects. The value typically applied by this agency to implement the water quality standard for protection of aquatic life is 20 ppb (0.02 mg/l). Assuming the reported data is characteristic, the instream concentration of cadmium could be expected to run at approximately 6 ppb until outfall 018 is reached. At that point the concentration should drop with the dilution of that discharge and gradually diminish to 2 ppb

further downstream as additional discharges from USSC commingle with the river. Since those levels are well within the 20 ppb concentration deemed equivalent to the standard and USSC does not appear to add appreciable quantities of cadmium (the outfall concentrations differ little, if any, from the measured intake concentrations), we do not consider effluent limitations for cadmium to be warranted at this time.

Need for an Effluent Limit for Mercury at Outfall 030

If the discharge from outfall 030 with a mercury concentrations of 0.3 ppb were the only discharge such that there were little upstream flow under low flow conditions, we would be inclined to agree that an effluent limit for mercury would be warranted to assure water quality standards are met. In actuality, however, even at low flow, there should be approximately 240 MGD from USSC outfalls upstream of 030 (and 028 which should be essentially equivalent in effluent quality to 030). Assuming the 030 discharge typically contained 0.3 ppb mercury, the instream mercury concentration should be at or below 0.1 ppb after the roughly 80 MGD from 028 and 030 mix with the upstream flow. The discharge from 030 (and 028) could contain as high as 1.7 ppb mercury and, assuming the upstream discharges included 0.1 ppb mercury (the detection limit), still allow the river to stay within the 0.5 ppb standard after mixing.

Thus, we are not of the opinion that a mercury limitation is warranted at outfall 030. We can think of no reason for the presence of mercury in the effluent from 030 and suspect the reported result may be an anomaly. However, to provide greater assurance of this, we believe temporary monitoring for total mercury at 030, consisting of one 24-hour composite sample per month for three months, should be conducted by USSC.

Need for Effluent Limits for Iron

Iron is obviously an expected pollutant in the discharge from steelmaking facilities. However, U.S. EPA decided against regulating iron, as a pollutant, in the Iron and Steel Guidelines. Primarily, this seems to derive from the fact that iron is substantially removed by BPT for regulated pollutants such as total suspended solids, lead, and zinc and from the EPA's earlier determination not to list iron as a toxic pollutant under Section 307(a) of the Clean Water Act, even though it has certain toxic qualities. Iron concentrations reported in USSC's permit application correspond fairly well with those specified as typical in the EPA Development Document for the Iron and Steel Guidelines.

If it is assumed conservatively that all iron discharged from the outfalls you have identified remains in the water column and that the raw water from Lake Michigan contains roughly 0.2 mg/l, the instream iron concentration in the Grand Calumet will range from around 3.2 mg/l at 002 down to 0.61 mg/l at 019 and back up to 1.47 mg/l at outfalls 028/030. This is relatively consistent with our agency's fixed station monitoring data for station GRC 41 slightly downstream of USSC

where the monthly samples for iron in 1981 varied from 0.56 mg/l to 1.4 mg/l with an annual average of 0.92 mg/l.

We agree that the scientific literature predicts that instream concentrations of total iron above 1.0 mg/l can have deleterious, even lethal effects on aquatic life. However, it is interesting to note that a substantial majority of Indiana streams which are monitored in this agency's fixed monitoring station network exhibit higher levels of iron than those in the Grand Calumet River downstream from USSC. Taking this observation into account along with the limited aquatic life use classification of the Grand Calumet River, it does not appear that the iron discharges pose a substantial water quality threat.

The discharge of iron from at least two outfalls -002 and 020- should diminish in the near future because of wastewater treatment improvements being implemented by USSC. The process wastewater from the Tubing Specialties plant is now being treated in the new filtration system and recycled with only a small blowdown to 002. These wastewaters should have been the primary source of the iron measured in the application. Regarding 020, the process wastewaters from the continuous caster will be recycled and the blowdown diverted to the Terminal Treatment Lagoons (which discharge from 028 and 030) by July 1, 1984. To ascertain the degree of improvement, we will specify temporary monitoring for iron as follows: outfall 002 shall be monitored monthly for three consecutive months commencing with the effective date of the permit; outfalls 020, 028, and 030 shall be monitored monthly for three consecutive months commencing in July 1984.

As discussed above, this agency expects to conduct a comprehensive water quality survey of the Grand Calumet River and to develop a revised waste load allocation sometime in the next 12 to 18 months. Iron will be one of the pollutants monitored during this survey. If the iron discharges from USSC do impinge significantly on the river's quality, this should surface during the survey and should then be addressed in the context of the wasteload allocation process.

Zinc and Lead Limits at Outfall 017

The mass limitations for zinc at outfall 017 (8.23 lbs/day Daily Average and 24.71 lbs/day Daily maximum) are derived from the BAT guidelines for ironmaking (40 CFR 420.33). A discharge of zinc at the daily maximum limit of 24.71 lbs/day may have significant water quality impacts. If that amount were discharged at a typical flow rate for 017 (for times when there is a discharge) of 0.6 MGD, the zinc concentration in the mixing zone in the immediate vicinity of the outfall would be about 4.9 mg/l. This figure is close to the 96-hour LC_{50} concentration for carp (7.8 mg/l) at a hardness of 53. Generally, the LC_{50} concentration is used as a guideline to specify the maximum allowable pollutant concentration within a mixing zone to prevent acute toxicity to aquatic life. Since there are other pollutants permitted in the river as a result of USSC's discharges at concentrations near the water quality standards which may also cause stress on aquatic life (e.g. ammonia, cyanide, lead, and iron), it is desirable to reduce the maximum zinc limitations.

Thus, we are revising the maximum daily limitation for zinc at outfall 017 downward to 16.46 lbs/day. We believe this revised limit will provide an additional margin of safety from a water quality standpoint and will still be readily attainable by USSC. We see no need to revise the daily average limit as a discharge at that level should not cause a mixed instream concentration which would be even chronically toxic.

The preceding discussion applies equally to the lead limits at outfall 017. For the same reasons as above, we are reducing the daily maximum limit to 13.74 lbs/day while maintaining the daily average limit at 6.87 lbs/day.

Oil and Grease Data for Outfall 021

An oil and grease concentration of 3.0 mg/l, as a maximum 30-day average, is reported on page V-2 of the Permit application for outfall 021.

Deletion of Oil and Grease Limits for Several Outfalls

Concurrent with the issuance of its initial NPDES permit, USSC was performing a water pollution clean up program. Many of the outfalls were being converted from mixed process wastewater and cooling water to either cooling water only or process water only.

An oil and grease concentration limitation of 10 mg/l was applied at each of the cooling water outfalls 019, 020, 021, 032, 033, 035, 037, and 038 as an enforceable indicator pollutant limitation to assure that the process wastewater had been eliminated from the outfall. Six years of monitoring data have shown the absence of process wastewater. Monitoring is still required to insure the absence of wastewater. The 10 mg/l limitation, a technical (analytical) confidence level, was deleted because the public could interpret the limit as allowing a greater than actual oil discharge. Also, such a limit could provide USSC with an exemption from liability for oil discharges under Section 311 regulations.

Outfall 034 discharges the effluent from process treatment outfalls 604 and 605. There are promulgated oil and grease mass limitations at both of the treatment outfalls; consequently there is no reason to have an oil and grease limitation at outfall 034. Presently outfall 039 is a mixed flow - treated process and cooling water - outfall. By June 1, 1983, it will be converted to a cooling water outfall by diverting treatment outfall 605 effluent discharge from lake outfall 039 to river outfall 034. Outfall 039 will be monitored to insure there is no process wastewater discharged. As was done at the other cooling water outfalls, the oil and grease limitation at 10 mg/l was deleted because the public could interpret the limit as allowing a greater than actual oil discharge.

Need for an Effluent Limit for Sulfate at Outfall 017

Regulation 330 IAC 2-2-5(b)(10) sets a maximum water quality standard for sulfate of 225 mg/l, as you have stated, and an annual average standard of 75 mg/l. The principal concern with dissolved solids such as sulfate ions is their adverse impact on the use of affected waters for domestic or industrial purposes. They do not impact aquatic life until levels over an order of magnitude greater are reached. Thus, with no immediate downstream water supply intakes, there is no need to scrutinize instream sulfate levels until after the discharge from outfall 017 mixes with upstream flow and, in point of fact, the standards in question explicitly apply outside the mixing zone for any discharge.

With these points in mind, a review of the sulfate discharge data from 017 is in order. There were only three months during 1981 and 1982 in which a discharge from 017 occurred: September and October of 1981 and April 1982. The highest sulfate concentration reported for a daily discharge was 2,100 mg/l @ a flow of 0.46 MGD during October 1981. The mixed downstream sulfate concentration, based on an upstream flow of 44.7 MGD (the entire stream is utilized here since a "zone of passage" is not germane) and an upstream sulfate concentration of 25 mg/l (from Lake Michigan data) is 46.6 mg/l, approximately one fifth of the maximum standard.

The highest monthly average discharge -1,200 lbs/day- occurred in April 1982. The mixed instream concentration, based on the same upstream data, is 28.2 mg/l of sulfate, only 12.8 percent above background concentration and 37.6% of the annual average standard.

Based on the above, we are not setting an effluent limit for sulfate at 017.

Need for an Effluent Limit for Ammonia-N at Outfall 020

We also were initially concerned with the maximum value of 4.6 mg/l for total ammonia (as N) in the discharge from outfall 020 as reported in the permit application. Since our preliminary review, we learned that this value is no longer representative. A review of the discharge monitoring data for 1981 and 1982 reveals that the monthly average ammonia-N concentration at 020 typically ranged from 0.1 mg/l to 0.2 mg/l and the maximum daily value during a calendar month characteristically ranged from 0.1 mg/l to 0.3 mg/l although a daily maximum concentration occurred as high as 0.7 mg/l. These 1981-82 data are essentially equivalent to ambient levels in near shore Lake Michigan waters. Thus, we are requiring neither an effluent limit nor monitoring for ammonia-N at outfall 020.

Need for Additional Effluent Limits for Phenols

This response addresses the reported presence of phenols in USSC's outfalls 020, 021, and 039. These outfalls will be discussed in reverse order.

As you may recall, the effluent from 039 comprises contact and noncontact cooling waters from the 84" hot strip mill. Generally, phenols would not be expected to be present in appreciable quantities from hot forming operations. Nonetheless, the permit application indicates the presence of phenols (4AAP) in the range of 0.10 mg/l (maximum reported value of 0.130 mg/l from three samples).

While these levels would generally be large enough to merit consideration for establishment of effluent limitations, we do not believe any practical purpose would be served in this case by setting a phenols limit. As discussed in the Fact Sheet accompanying the draft permit, USSC will divert the process (contact cooling) wastewaters from 039 to 034, in conjunction with the addition of a multi-media filtration unit, by June 1 of this year. No other process control or treatment step could be or need be instituted before that date. Thus, we consider the issue moot for outfall 039. The phenols in the 84" HSM wastewater diverted to Outfall 034 will be subject to the "Water Quality Bubble" limit for phenols found on page 17 of the permit.

While the discharge from outfall 021 is reported in the permit application to have a phenols (4AAP) concentration of 0.01 mg/l, we consider the outfall to be of negligible import since there is usually no discharge. (There has been no discharge reported from 021 since May of 1981 and infrequent small discharges for years prior to then). Consequently, no phenol limitation is imposed at this outfall.

The issue of phenols at outfall 020 is more problematic and should be considered in the context of the discussion of the "water quality" bubble issue in response to Comment No. 13. In reviewing the 1981 and 1982 DMR data for 020, it can be seen that the monthly average phenols (4AAP) concentration ranged from 0.001 mg/l to 0.015 mg/l. In seven of the eight most recent months for which we have DMRs, the monthly average concentration has been 0.006 mg/l or less. Over the same eight month period, six months had a maximum daily value reported at 0.008 mg/l or less and two months had maximum values exceeding 0.01 mg/l. If the upstream discharges were well within the 0.01 mg/l standard, the 020 discharge would probably not be significant regarding attainment of the water quality standard. However, certain of the upstream outfalls frequently exceed the 0.01 mg/l level, as discussed below.

Within the near future but not later than July 1, 1984, all process wastewaters will be eliminated from this outfall. It is our expectation that the presently low levels will diminish further when that occurs. If the phenols levels do not decrease at that point, it may be feasible to establish a "best management practices" approach akin to that specified by the permit for outfalls 007 and 018. It does not appear practicable to consider end-of-the-pipe treatment for phenols at 020. The concentrations are too low to support biological treatment without supplemental nutrients for the biomass and removal efficiency would be probably quite low. Granular activated carbon absorption would be effective but extremely costly for the volume of flow from this outfall.

In recognition of the above, the draft permit requires continued monitoring for phenols at 020 but does not set an effluent limit at this time.

Need for Effluent Limits for Fluoride at Outfalls 017 and 034

As you know, the only salient water quality impact of excessive levels of fluoride is the mottling caused to the teeth of consumers of water. The water quality standard of 1.3 mg/l applies only outside the mixing zone of a discharge. (See 330 IAC 2-2-5(b)(8)). Since there are no water intakes in the immediate downstream vicinity of USSC's Gary Works, it is simplest to evaluate the combined effect of the fluoride discharges from outfalls 017 and 034. Using the maximum fluoride discharges from these two outfalls and a conservative background fluoride concentration of 0.3 mg/l for all other USSC discharges to the Grand Calumet River, the calculated mixed river fluoride concentration downstream of outfall 034 is 0.49 mg/l. This level is well within the standard and we perceive no need for effluent limits for fluoride at these two outfalls. Actually, the long-term average fluoride discharge is higher (in terms of mass/time) from outfalls 028 and 030 than from 017 and 034. For this reason the permit does utilize 030 as an indicator of fluoride discharge by requiring monitoring at that outfall. Even with the actual fluoride levels from 028 and 030 incorporated into the above calculation, the mixed downstream fluoride concentration should be about 0.68 mg/l, still well within the standard.

Use of Concentration Limits

In your comments, you have criticized the use of concentration limits only for oil and grease and total suspended solids at certain outfalls. There are only four outfalls in the draft permit for which concentration limits are set: 002, 039, 007, and 017. The first two carry over concentration limits for total suspended solids and oil and grease from the Consent Decree as interim limitations to be in effect only until January 31 and May 31, respectively, of this year. Thus, for 002 the interim limits are already obsolete. The draft permit specifies final concentration limits only for the parameter of oil and grease at outfalls 007 and 017. All other final effluent limitations for process wastewater pollutants, including all those based on the Iron and Steel Guidelines, are mass limitations. Thus, the draft permit affords minuscule opportunity for compliance through the dilution of wastestreams.

Water Quality Bubble

The water quality bubble contained in the proposed permit on page 17 of 32 for outfalls 002, 007, 010, 017, and 034 limits ammonia-N, total cyanide, and phenols (4AAP). Except for outfall 017 (sinter plant and blast furnaces), the water quality bubble does not provide for specific effluent limitations for each outfall. Your comment that the effluent limitations guidelines regulation for the steel industry requires specific effluent limitations for each outfall contained in a water quality bubble is in error. The bubble provisions contained in

the steel industry regulation (40 CFR 420.03) provide for alternate effluent limitations to those specified by 40 CFR 420, Subparts A through L (i.e., the technology-based effluent limitations required by Section 301 of the Clean Water Act). Those bubble provisions require that each outfall have specific effluent limitations. In the case of the proposed NPDES permit for the USSC Gary Works, there are two bubbles: one implemented through 40 CFR 420.03 (outfalls 028, 030, and Station 605); and, the water quality bubble for outfalls 002, 007, 010, 017, and 034. Since the effluent limitations applicable to water quality bubble outfalls are not based upon 40 CFR Part 420, Subparts A through L, but are based upon water quality standards, the constraints of 40 CFR 420.03 are not applicable.

Note that for Outfall 017, where effluent limitations were derived from the effluent guidelines, those limitations are included in the permit on an outfall specific basis. Similarly, outfalls 002 and 034 contain wastewaters originating from processes regulated by the Iron and Steel Guidelines. Mass limits are set for these processes based on the guidelines at internal monitoring stations rather than final outfalls (e.g., 601/002; 604 and 605/034). It is also interesting to note that only at outfall 017 are the pollutants controlled in the water quality bubble also regulated by the Iron and Steel Guidelines.

The proposed collective effluent limitations for the water quality bubble outfalls contained in page 17 of the draft permit were determined from USSC monitoring data for the period October 1980 to October 1982. Based upon the historical variability of the discharges from those outfalls, we are confident that the aggregate discharge will be less than the 30-day average limitations slightly more than 95 percent of the time and less than the daily maximum value more than 99 percent of the time. Thus, provided USSC maintains or improves its current discharges, water quality standards for ammonia-N and total cyanide will consistently be achieved throughout most of the river as it flows through the USSC plant site and the water quality standards for phenols (4AAP) of 0.010 mg/l will be achieved most of the time just downstream of the plant. Any exceedances of the phenols (4AAP) standard will be minimal. Unfortunately, some of the outfalls that contain discharges of ammonia-N, total cyanide, and phenols (4AAP) are located at the upstream end of the plant where large volumes of uncontaminated cooling water are not available for mixing. In this area (about one to two miles) it is apparent that water quality standards cannot be achieved on a consistent basis, particularly for phenols (4AAP), with current USSC discharges. These discharges are affected by contamination of noncontact cooling water in the coke plant and blast furnace areas. To address that problem, the proposed NPDES permit contains a special condition on page 23 of 32. We believe that implementation of this program will result in significant improvements in the affected discharges. If this does materialize as we expect, we envision the effluent limitations may be tightened in the future. USSC has a similar ongoing program to address this problem for Outfall 002.

As discussed above, we do not believe it is practical or necessary to set ambient water quality criteria as effluent limitations for the USSC - Gary Works. This would only be necessary where full

aquatic life uses are to be protected at the point of discharge and no provision of mixing zones is desired. As you know, Indiana has not classified the Grand Calumet River for full aquatic life uses. Nonetheless, for most pollutants and for most of the river passing by the USSC - Gary Works, aquatic life criteria are being achieved. The ISBH will use the results of the planned comprehensive water quality survey to re-evaluate the classification of the stream and determine whether different water quality-based effluent limitations are appropriate for the USSC-Gary Works. Because the final results of that study will not be available for possibly two years, we believe it is in everyone's interest to proceed with issuance of NPDES permits for USSC and other discharges at this time.

Need for Minimum Dissolved Oxygen Limits

We agree that it is necessary to maintain the dissolved oxygen (D.O.) concentration in a water body above some minimum level to assure the survival of aquatic organisms. In the case of the Grand Calumet River, the minimum D.O. standard is 4.0 mg/l (see 330 IAC 2-2-5(b)(4)).

The raw water utilized by USSC is drawn from Lake Michigan where D.O. levels are typically at saturation levels of 9 to 12 mg/l. Since USSC operations are not expected to substantially reduce the influent D.O. levels and since USSC does not discharge large concentrations of oxygen-demanding pollutants, we do not consider a minimum effluent limit for D.O. to be necessary for USSC's discharges. This belief is corroborated by the fact (which you have cited) that D.O. levels in the East Branch of the Grand Calumet River have shown steady improvement and usually exceed the minimum standard. D.O. violations in the Grand Calumet River generally have been associated with the municipal discharges.

Need for a Chloride Limitation

As part of the Civil Suit Settlement Agreement between USSC and the U.S. EPA, USSC funded the study you referenced (1) in Page 20 of your letter. The study found that the amount of chlorides to be discharged from the Alkaline-Chlorination Treatment Plant would not present a problem to Lake Michigan.

In comparing the past chloride limitation -86,000 lbs/day as a net annual average - which derives from the wasteload allocation with the 1982 and 1981 annual average discharges - 30,634 lbs/day and 29,623.2 lbs/day, respectively - it can be seen that the actual discharge of chloride from USSC runs less 35 percent of the past limit. On this basis, also, an effluent limit does not appear necessary. The permit does contain chloride monitoring at outfall 034 - typically the largest chloride discharge - as a continuing indicator of chloride discharge levels. Should the levels begin to rise significantly, consideration would be given to reinstating an effluent limit.

Need for Effluent Limits for Naphthalene and Tetrachloroethylene

The promulgated effluent limitations guidelines applicable to cold rolling operations include effluent limitations for naphthalene and tetrachloroethylene. In developing those limitations, the U.S. Environmental Protection Agency found several toxic organic pollutants in wastewaters from cold rolling operations. The EPA also found the number and quantity of specific toxic organic pollutants contained in these wastewaters are highly variable from plant to plant. Because of these factors, EPA could not promulgate nationwide effluent limitations for each toxic organic pollutant found in cold rolling wastewaters. In accordance with paragraph 8(a)(iii) of the Settlement Agreement in NRDC, Inc. vs. Gorsuch (73-2153), EPA promulgated effluent limitations only for naphthalene and tetrachloroethylene, which are more commonly found, and stated that effluent limitations for any other toxic organic pollutants must be developed on a case-by-case basis. The special condition on pages 23 and 24 of the draft NPDES permits is for that purpose.

Note that neither naphthalene nor tetrachloroethylene were found in the discharge from outfall 034 (at a detection limit of 0.010 mg/l). We do not believe it is appropriate to establish NPDES permit effluent limitations for pollutants that have been shown not to be present. However, because of the limited data available, we have included the detailed monitoring program in the proposed permit to specifically identify, during various operating conditions, the quantity and type of organic pollutants generated at the cold rolling operations and whether these pollutants are discharged. If significant quantities of toxic organic pollutants are found to be discharged, appropriate BAT effluent limitations will be developed and proposed as an amendment to the permit. All BAT effluent limitations will be made effective on the statutory deadline. Please be advised that should the results of the monitoring study demonstrate that naphthalene and tetrachloroethylene are not present in the discharge, we will not include effluent limitations and continuing monitoring for these pollutants owing to the high cost of analysis. Depending upon the results of the study, this agency may also propose a periodic reevaluation of this discharge.

Closing Remarks

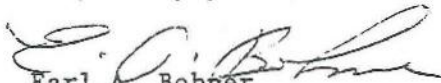
We intend to issue the permit to USSC not later than May 10, 1983. This should allow your organizations sufficient time to review the above information and discuss any further concerns with this agency, and U.S. EPA, if you desire, prior thereto.

The permit, as we intend to issue it, will contain the revisions discussed above: temporary monitoring of mercury at 030 and of iron at outfalls 002, 020, 028, and 030 and reduced daily maximum effluent limitations at outfall 017 for zinc and lead. Additionally, we will revise the pH monitoring requirement for outfalls 028 and 030, at USSC's request, from continuous monitoring to one weekly grab sample. We consider this reasonable since USSC does not have continuous pH monitoring equipment at these outfalls and since past monitoring data

show relatively little variability in effluent pH. Finally, pursuant to a request from USSC, the date for compliance with effluent limits for the blowdown from the 84" HSM recycle system (Monitoring Point 605) will be revised from June 1, 1983 to October 1, 1983. This has been necessitated by delays incurred by a USSC contractor, beyond USSC's control, in developing control equipment.

We trust the foregoing is sufficiently responsive to your inquiries on the bases of proposed effluent limitations for USSC's Gary Works and your suggested revisions. However, should you have further questions, you may contact Mr. Larry J. Kane, Permits Section Chief, at AC 317/633-0761.

Very truly yours,


Earl A. Bohner
Technical Secretary

cc: Irv Dzikowski, USEPA
Gary Amendola, USEPA
J. David Moniot, USSC

